Other cases are referred to in support of the evidence presented in detail from these cases.

The effect of atropin administration was studied in each of these cases. In the first case (digitalis-block) the dissociation was removed; the evidence of the modification of ventricular activity was considerable. Evidence of the modification of auricular activity was negligible

In the second case (block with normal auricular activity) the block was not removed but the ventricles were much more affected than the auricles. In the third case (block with fibrillating auricles) atropin did not destroy the block but allowed the ideoventricular rate to be greatly increased.

If we are right in assuming that atropin acts only by paralyzing the terminal filaments of the vagus it is evident that in each of the cases here described the vagus had a very important influence in controlling the ventricle, either through the junctional tissues or directly on the ventricular tissue.[13]

Case I emphasizes the fact that the vagus influence is sufficient to establish a block between the auricle and the ventricle.

Cases II and III indicate that even in the presence of a lesion sufficient to cause complete dissociation between the auricles and ventricles the nervous connections may remain in a condition of functional activity and thus continue to modify the ventricular rate and rhythm.

It is suggested that in certain cases of block the sympathetic nerve connections may escape damage and may thus be capable of exerting a direct accelerator influence on the ventricle.

The disappearance of the extrasystoles associated with an increase in the activity of the predominant pacemaker is illustrated.

For the privelege of studying a number of these cases I am indebted to the courtesy of my colleague, Professor Longcope, whose hearty coöperation while the patients were on his service in the Presbyterian Hospital has made these observations possible.

ACONITE AS A VASODILATOR.

By William Hanna Thomson, M.D.,
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One of the important questions in modern therapeutics is how to regulate arterial blood-pressure, particularly when it rises above normal. Morbid conditions due to high pressure are very numerous and equally varied in their causation. We should, therefore, readily recognize it when present, and be fully aware of its special dangers in each case. This paper proposes to discuss only the medicinal agents which may be used to lower blood-pressure, and how they may be administered.

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[13] For further views of the control of the ventricle by the vagus, see Ritchie, Quart. Jour. Med., 1912-13, vi, 62.

The commonest drugs employed heretofore for this purpose are the various preparations of the nitrites, such as amyl nitrite, nitroglycerin, potassium nitrite, and erythrol tetranitrate, named in the order of the duration of their action. The type of them all is amyl nitrite, whose action is so rapid that it is used only in sudden emergencies, as in attacks of angina pectoris. But the chief objection to amyl nitrite is that its action is not only sudden, but very evanescent, which applies also to all nitrites when the conditions of disease for which vasodilators are indicated is taken into account. These morbid conditions are usually chronic in both their origin and cause, such as the processes ending in arteriosclerosis, chronic interstitial nephritis or in sclerosis of nervous tracts.

These slowly induced textural changes are ordinarily caused by arterial ischemia, and either for their prophylaxis or for their management, all nitrites are of little service, owing to their temporary action. Meantime the organic changes in the walls of the arterioles lead to the obliteration of wide areas of both the arterioles and the capillaries of the affected parts. This alteration is well illustrated in chronic interstitial nephritis, when on baring the unnaturally white skin of the abdomen, it will be found comparatively difficult to produce a reddened mark by drawing the finger nail across it. In phthisis, on the other hand, the same procedure easily causes a scarlet line to follow the finger nail. But that which causes the cutaneous anemia must likewise occur in the capillary circulation of the internal viscera, and thus interfere with their functions. Now as the chief business of the kidneys is to eliminate urea, I have found that in chronic interstitial nephritis there is a characteristic and marked decrease in urea elimination.

My objection to all nitrites, as above stated, is that their vasodilating effects are too transient, the most prolonged of them, that of the erythrol tetranitrite, lasting for less than an hour, which is by no means sufficient for such a permanent morbid condition of general arterial contraction, with heightened blood-pressure, as is present in chronic interstitial nephritis.

After an experience of years in its use for this purpose, I regard aconite as the most efficacious vasodilator which we possess, when given systematically in full doses. Aconite thus administered at once reduces blood-pressure, produces a full and compressible pulse, and greatly increases the percentage of the elimination of urea in interstitial nephritis.

We may here briefly allude to some contrasts between the clinical features of parenchymatous and interstitial nephritis. In parenchymatous nephritis the kidneys are large and white in color, while in interstitial nephritis they are shrunken and red. In parenchymatous nephritis, albumin is abundant in the urine, in interstitial nephritis it is either wholly absent or present only in slight amount. In parenchymatous nephritis there is anasarca from beginning to end. In interstitial nephritis every sign of dropsy may be absent. In parenchymatous nephritis the urea elimination may be but slightly below normal, while in interstitial nephritis the urea is diminished from the start, below that of any other form of kidney disease.

The most important action of aconite when administered in interstitial nephritis is to increase the elimination of urea. In a former paper, read before this association, I stated that in a series of cases which I had observed in my wards in the Roosevelt Hospital, the elimination of urea after the administration of aconite, was increased, in a large proportion of these patients to double the amount, previous to the administration of aconite, and in two cases, to three times the amount. In a series of 7 cases of chronic interstitial nephritis observed for two weeks by Prof. J. Edgar Welch, Dean of the Department of Medicine, at Fordham University, the property of aconite to increase the output of urea was not observable until Dr. Welch himself raised the strength of the aconite from that of the present pharmacopeia, which is only 10 per cent., to the pharmacopeia of 1890, which is 35 per cent., and which was the strength of the preparation which I used in my above observations at the Roosevelt Hospital. On doing so, Dr. Welch found that the elimination of urea was immediately increased to the extent that I had observed. I have given as much as 10 drops of this strongest tincture 4 times a day with excellent results in the reduction of pressure.

The symptoms produced by heightened blood-pressure are usually distinct shortness of breath, often with a sense of oppression at the epigastrium, very perceptibly increased by muscular exertion, such as by walking or by ascending stairs, and especially by walking against the wind. Patients in such a condition are frequently obliged to stop, as they express it, "To catch their breath." Not uncommonly actual anginose pains come on, with attacks of dizziness. In one case, a lady now seventy-five years of age, these symptoms were formerly very troublesome, but by perseveringly taking the aconite three or four times a day, she has been free altogether from them for twelve years, provided she does not omit the aconite.

Another case was that of a well-known physician, aged sixty years, a somewhat fleshy man, with a large chest, and a blood-pressure of 185 mm., who had severe attacks of anginose pains, waking him about 2.00 A.M., which passed down the left arm to the wrist. He was treated with the 10 per cent. tincture of aconite, 15 drops, combined with 5 grains of sodium iodide, t. i. d., whereupon all his symptoms improved, and his blood-pressure dropped from 185 to 160 mm. After continuing this line of treatment for two years, he reduced the aconite to only 10 drops, with an entire disappearance of his old symptoms.

The beneficial effects of aconite are particularly pronounced in mental derangements of the nature of melancholia with high blood-pressure. Thus a patient of mine had been gradually passing from a state of melancholia with hallucinations about being financially ruined, until he became maniacally insane, and repeatedly tried to break through the windows. He was then treated by Dr. J. Edgar Welch, who had to employ three men to hold him while he was taking his blood-pressure. Dr. Welch by my directions gave him 15 drops of the 10 per cent. tincture of aconite and 15 drops of the tincture of veratrum veride every half-hour. He took six of these doses before he became quiet, after which he remained permanently better, and in a few weeks was able to resume business, meantime taking 15 drops of the 10 per cent. tincture of aconite, four times a day, to prevent a relapse.

As a veteran teacher of materia medica, I insisted upon the fundamental difference between functional and organic or constitutional medicines. Functional medicines like aconite or opium produce their whole effects in one dose, and however often repeated, the effect of the last dose is no different from that of the first. Organic or constitutional medicines, on the other hand, like iron in chlorosis, and mercury in syphilis, do not produce their effects except by the cumulative action of many doses. Therefore the proper dose of a functional medicine is not reached till it causes its own symptoms. In the above case of maniacal melancholia I was obliged to give 180 drops in the course of three hours, because any less quantity would have produced no effect.

A few years ago I was asked by a gentleman to prescribe for his widowed sister, Mrs. G., without seeing her, because in her then condition she refused to see any physician, or to take any medicine. His story was that she had been subject to severe melancholia until she became maniacal, and had to be committed to an asylum, in which she remained for about six months. She was then allowed to go home where she remained for nearly two years, attended by a trained nurse, but as above mentioned, in strict seclusion. Her high blood-pressure, and this gentleman's description led me to conclude that she was affected by melancholia, and without seeing her, I prescribed aconite, given by her nurse before each meal without the patient's knowledge. She at once began to improve in her mental state. Noticing, however, that she became nervous and excitable toward night, I concluded to add a fourth dose of the tincture of aconite in the evening. After this she wholly recovered, and began to gain flesh, remaining in excellent health and spirits until her death, which occurred in her sleep, as hereinafter detailed by her brother in a letter to me.

"My sister passed away in her sleep Saturday morning, May 3. She owed to you five years of health and happiness, and I owe you a debt of gratitude which no words can describe. It seems to me in the interest of humanity, your treatment by aconite should be known in the various institutions where circulatory troubles are diagnosed as diseases of the brain."

WHEN AND HOW TO USE TUBERCULIN PREPARATIONS IN PRIVATE PRACTICE.

EFFICACY OF ADMINISTRATION BY MOUTH.

By Solomon Solis Cohen, M.D.,

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If tuberculin is to become a useful therapeutic agent, its administration must be made so safe and so simple that it can be employed without fear by the general practitioner. After all, it is but a very small proportion of the tuberculous who come under sanatorium care, or who seek the advice of "tuberculosis specialists;" and any treatment that must needs be restricted closely in its application can do but a minimum of good.

Thanks principally to Arthur Latham and his co-workers, H. D. Spitta, and A. E. Inman, we have now a method of administration of tuberculin and similar bacterial products which meets the necessities of the situation.

The writer of this paper is among those who condemned and opposed the use of the so-called "Koch's lymph" when it was first—and, through the meddling of the German Emperor, prematurely—introduced. Both theory and observation were convincing as to its harmfulness in the overwhelming number of cases; and nothing of what was then said[1] needs be retracted.

But later work, and especially the painstaking studies of Trudeau, have shown not only the cause of the unfortunate results of the first period, but also how they may be avoided.

The early disasters were chiefly owing to two errors: (*a*) *crude dosage;* and (*b*) *unsuitability of cases* treated. With due attention to the selection of cases, and with careful choice and gradation of

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[1] S. Solis Cohen, Therapeutics of Tuberculosis, in Hare's "System of Practical Therapeutics," first edition, Philadelphia, 1891, vol. i, pp. 872 to 874.